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BA WTR
WR ND
Mail Stop 60189

MAR 14 2005

Memorandum

To: Project Leader, Tewaukon National Wildlife Refuge

From: Chief, Division of Water Resources /s/ CHERYL C. WILLIAMS

Subject: 2004-2005 Annual Water Use Report/Management Plan

The subject reports for Tewaukon and Storm Lake National Wildlife Refuges have been reviewed and approved as submitted. The 2005 Water Management Plan for Tewaukon NWR will be forwarded to the State as the 2005 Operation Plan.

The Service applied for a prescriptive water right for Tewaukon NWR in December 2001 and it is numbered 5548P for future reference in your report.

The figures for the Declaration of Filing for Storm Lake NWR are incorrect in your report and should be corrected on future reports. Storage should be 729 acre-feet and seasonal use of 516 acre-feet.

Attached is the signed approval page for your files.

Attachment

bcc: WTR rf
RO rf

WTR:CCordova:cc:03/09/05
I:\WATERUSE\ND\TEWAUKON NWR\wateruse_04.doc

Signature Page

2004 Water Use Report 2005 Water Management Plan

Submitted By: Jack Lalor Date: 2/28/05
Jack Lalor, Acting Project Leader

Reviewed By: Rodriguez Date: 3/4/05

Approved By: Ron Shupe Date: 3/6/05

Concurrence: Cheryl Williams 3/9/05

**Tewaukon National Wildlife Refuge Complex
2005 Annual Habitat Management Plan
2004 Water Use Report
2005 Water Management Plan**

REFUGE MANAGED WETLANDS

CCP Refuge 1.5 Objective: Annually provide for approximately 20% in dry, 20% in shallow, 20% mid-depth, and 20% open water wetland conditions on Refuge managed wetlands and manage remaining 20% as a reserve to adjust to local climatic and habitat conditions.

1. List of Water Rights

See Appendix 1.

2. Water Use - 2004

The year 2004 started out with little to no snowfall and no rain until the end of May. We received over eight inches of rain over the Memorial Day weekend and almost five inches over Labor Day weekend. The average annual precipitation for southeastern North Dakota is 20 inches of rain and about 40 inches of snow.

Month	<u>Temperatures</u>		Rain	<u>Precipitation</u>
	Low (Average)	High (Average)		Snow
January	3 °F	16 °F	0	4.1"
February	11 °F	18 °F	0	3.8"
March	21.5 °F	54 °F	0	0"
April	30.5 °F	72.5 °F	0.73"	N/A
May	39 °F	68.5 °F	8.42"	N/A
June	54 °F	75 °F	2.14"	N/A
July	53 °F	80 °F	3.94"	N/A
August	55 °F	75.5 °F	0.93"	N/A
September	49.5 °F	80 °F	4.78"	N/A
October	34.5 °F	69 °F	3.41"	N/A
November	36.5 °F	48 °F	0"	0"
December	31 °F	43 °F	0"	2.3"
Totals:			24.35"	10.2"

While the area received above average precipitation in southeastern North Dakota, the precipitation came in two major events. Water levels did not maintain themselves early in the season due to lack of snow however the major event in May raised water levels and caused some inflows.

New data loggers were installed in Pools 1, 2, 3, 4, 7, 7A, 8, 11, 14, 16A in the fall of 2004. A field visit from the Water Resources Division in the RO was made in 2004 to facilitate the operation of the loggers. More work will be needed in 2005 to make the data loggers operational.

Dike work was completed on the Nickeson Bottoms project in the fall.

Pool 1 (Lake Tewaukon): Pool filled to operating level of 1148 on April 1st. Heavy Memorial Day weekend rains and run-offs pushed lake to high of 1149.88 on June 2nd. Lake came back to near normal on June 17th at 1148.03. Freeze up at 1148.26.

Parker Bay (east end of Lake Tewaukon): Water inflows from LaBelle Creek came on March 23rd to March 27th to approximately 1147. Freeze up elevation was 1147.5.

Pool 2 (Cutler Marsh): Water was collected in Pool 2 as a reservoir for Pool 1 if needed later in the year. Pool 2 peaked at 1152.42 on June 3rd. Level fluctuated to low of 1150.1 on September 10th. The pool froze at 1151.34.

Pool 2A: Pool 2A followed Pool 2 levels.

Pool 3 (Maka Pool): Elevation at 1154 on March 17th. Boards pulled to keep pool drawn down to facilitate Nickeson Dike repair. Water below gauge all year until freeze up which occurred at 1154.05.

Pool 3A: Pool followed Pool 3 elevations.

Nickeson Bottoms: There were no inflows into this pool all year to help facilitate dike re-hab. Freeze up level was approximately 1152.

Pool 4 (River Pool): Pool 4 stabilized 1158.85. This elevation kept water off of neighboring farmers field. On September 10, at elevation 1159.25, we pulled boards to facilitate data logger installation. Freeze up at 1159.96.

Pool 5: Pool was dry in spring. There was not enough precipitation to refill pool. Freeze up occurred at 1156.

Pool 5A: Pool was dry in spring, filled to approximately 1164. Freeze up elevation 1163.

Pool 6: Structure and dike breached. Pool dry at freeze up at 1163.

Pool 7: Dry in spring. September 24th water started filling pool to 1172. Freeze-up was at 1172.

Pool 7A: Filled from Hepi Lake (Pool 8) to approximately 1175.5 in spring. No additional inflows. Pool froze up nearly dry at 1173.50.

Pool 8 (Hepi Lake): Inflow from ditch to south filled pool to 1176 in May. Boards pulled September 22nd to facilitate data logger installation – freeze up 1173.42.

Pool 9: Inflows from Pool 8 filled the pool to approximately 1167. At that elevation water outflows into Pool 4. Freeze up at approximately 1165.5.

Pool 10: Pool began year at 1173 there was no flow into this pool when freeze up occurred at 1172.25.

Pool 11 (West White Lake): This pool peaked at approximately 1151 in May from local run-off. Freeze up occurred at 1150.

Pool 12 (East White Lake): Pool 12 received no inflows. By freeze up, Pool 12 was at approximately 1146.5.

Pool 13 (Mann Lake): No spring runoff to fill pool. Evaporation had lowered it to approximately 1204 at freeze up.

Pool 14 (Sprague Lake): The lake peaked at 1215.43 on June 2nd. Tried to maintain full pool at 1214.50. Freeze up at approximately 1214.24.

Pool 16 (Horseshoe Slough Group): No spring inflows.

Pool A – Freeze up occurred at 1206.

Pool B – Freeze up at 1202 – pool dry.

Pool C – Freeze up at 1203.

B West – Freeze up at 1206.

B North – Freeze up at 1204.

C North – No inflows freeze up at 1206

C South and C East – Freeze up at 1204.

3. Impoundment Data

Please see the attached chart (Appendix 2) for capacities for each pool at various elevations. No formal inflow/outflow records were maintained.

4. 2005 Plans

Pool 1 (Lake Tewaukon): Fill this pool to 1148 and maintain that elevation for the fisheries and resting area for migratory birds in the spring and fall.

Parker Bay (east end of Lake Tewaukon): Maintain 2-3 feet of depth. No inflows to encourage emergent and submergent vegetation.

Pool 2 (Cutler Marsh): This pool will be maintained at 1150.

Pool 2A: This pool will follow the elevation maintained in Pool 2.

Pool 3 (Maka Pool): Maintain this pool at 1150 to encourage emergent vegetation and to facilitate water lowering in Nickeson Dike.

Pool 3A: Maintain this pool in concert with Pool 3.

Nickeson Bottoms: Continue to drop water in this pool through evaporation to promote emergent vegetation.

Pool 4 (River Pool): Fill pool to 1158.85.

Pool 5: Try to fill and maintain elevation at 1162 if inflows allow.

Pool 5A: Maintain water at 3-4 feet (elevation 1164).

Pool 6: Dike is currently breached. We will be repairing in 2005. Pool will be filled if possible in 2006.

Pool 7: Fill to 2-3 feet (1172).

Pool 7A: The pool will dry out rapidly through an average summer due to the evaporation of its large surface area. Start out with pool at 1172.

Pool 8 (Hepi Lake): As spring runoff increases the pool level, water should be diverted to fill Pools 5 and 5A. If excess water exists after filling Pools 5 and 7, Pool 8 will be lowered to 1170 to increase the vegetation and provide large mudflats for shorebirds in the fall.

Pool 9: Maintain a 2 - 3 foot level in this pool (no greater than 1164.5) to allow for vegetative growth.

Pool 10: No inflows. Maintain an elevation of 1172.25 to encourage vegetation growth.

Pool 11 (West White Lake): Allow water levels to drop in this pool to promote emergent vegetation growth.

Pool 12 (East White Lake): Allow this pool to drop as low as possible through evaporation and restricting inflows.

Pool 13 (Mann Lake): This pool will be allowed to dry up to encourage emergent vegetation. No inflows.

Pool 14 (Sprague Lake): Maintain elevation at 1214.50 to help reduce risk of winter kill of the fishery and provide a rest area for migratory waterfowl.

Pool 16 (Horseshoe Slough): Water levels in these pools will be allowed to continue to drop to reestablish vegetation. No inflows.

5. Location Map

See attached Refuge map (Figure 1 and 2) with all the management pools delineated.

UNMANAGED REFUGE WETLANDS

CCP Refuge 1.8 Objective: Determine the quality and health parameters of non-managed wetlands in order to preserve their natural productivity, longevity, and function.

CCP Refuge 1.10 Objective: Reduce by 15% nonnative plants on Refuge lands and waters.

The following 2005 projects were developed to make progress on the above objectives:

- 1) Work with Sargent County Natural Resources Conservation Service to conduct sedimentation level surveys in a sample of farmed and non-farmed Refuge wetlands. Depending on the findings, vegetative buffer strips may be added around Refuge wetlands in cropland.
- 2) Cut down live cottonwood trees around seasonal wetland on north side of Lake Tewaukon, near County Road 12.
- 3) Using GPS delineate areas of phragmites communities to monitor their spread.
- 4) After prescribed fire in North Pool 2 unit, use herbicide to treat reed canary grass on selected wetlands.

Monitoring: Change in species composition in year 1, 2, & 3 post treatment.

PRAIRIE FOCUS AREAS (See Figures 3-7 for locations)

CCP Refuge 1.2 Objective: Manage six Refuge Prairie Focus Areas (S. Pool 4, Krause, N. Pool 2, SW Sprague Lake, S. Horseshoe, and SE of Railroad Tracks) and 3 WPAs (Hartleben, Gunness and Gainor) to: 1) to achieve an area of contiguous grassland (greater or equal to 160 acres) that is greater than 50 meters from woody vegetation (greater than one meter tall); 2) contain a variety of vegetative heights on the area with 20% in each of the following categories: 0 to 20 cm; 20–30 cm; 30 to 60 cm; greater than 60 cm; 3) to increase native floral diversity so that greater than 75% of the vegetative composition is composed of indicator species of the dry mesic tallgrass, central mesic tallgrass prairie, wet prairie, mesic tallgrass prairie climax communities (Heidel 1986).

CCP Refuge 1.4 Objective: Over the next 15 years convert 600 acres of planted cover to a diverse native floral community composed of 75% of the climax species identified in Heidel's Classification.

CCP Refuge 1.10 Objective: Reduce by 15% nonnative plants on Refuge lands and waters.

The following 2005 projects were developed to make progress on the above objectives:

Refuge Unit: South Pool 4 (Figure 3)

- 1) Burn 70 acres to stimulate nonnative plant, seed for chemical application in 2005, reseed to native mixture in 2006. Burn 25 acres of native prairie to enhance native vegetation when there is approximately 2-5 inches of spring green up of the cool season grasses.
- 2) Chemically (Round-up) treat 70 acres of tame grass in preparation for reseeding
- 3) Chemically (Curtail) treat thistle patches in the unit except on native prairie
- 4) Mow patches of thistle on native prairie

Refuge Unit: Krause (Figure 3)

- 1) Mow patches of thistle.
- 2) Graze the Krause WPA under a twice over grazing system to control brome.

Refuge Unit: North Pool 2 (Figure 3)

- 1) Participate in a regional grassland bird study on the impacts of trees. In 2005, select sites, conduct surveys to gather baseline information. Remove existing treebelt north of Pool 2, in the fall of 2005.
- 2) Mow patches of thistle, apply chemical (Curtail) on seeded native field
- 3) Burn 240 acres in mid-spring when there is approximately 2-5 inches of spring green up of the cool season grasses.

Refuge Unit: SW Sprague Lake (Figure 4)

- 1) Mow for weed control as necessary
- 2) Cut and chemically treat invasive Russian olive trees

Refuge Unit: South Horseshoe (Figure 4)

- 1) Mow for weed control as necessary

Refuge Unit: SE Railroad tracks (Figure 4)

- 1) Mow for weed control as necessary

District Unit: Hartleben WPA (Figure 5)

- 1) Burn 640 acres (all Section 9 excluding abandoned farmsite) when there is approximately 2-5 inches of green up of the cool season grasses.
- 2) Cut and treat stumps of invasive Russian Olive trees and volunteer poplar species
- 3) Mow volunteer poplar species
- 4) Burn 30 acre unit on the southern 1/3 of WPA in the late fall (October)
- 5) Chemically treat leafy spurge patches with Plateau in the fall (August-September)
- 6) Monitor and move leafy spurge beetle populations as needed.
- 7) Late season hay on 1/3 of the southern unit and north wet prairie unit.

District Unit: Gunness WPA (Figure 6)

- 1) Burn 230 acres (north and middle unit) in the mid-spring when there is approximately 2-5 inches of green up of the cool season grasses or late fall (October).
- 2) Cut invasive trees before prescribed burn.
- 3) Mow thistle patches
- 4) Chemically treat leafy spurge patches with Plateau in the fall.

District Unit: Gainor WPA (Figure 7)

- 1) Burn 139 acres (cells 7, 8, 10) in early spring (April, May)
- 2) Burn 144 acres (cells 2 & 5) in late fall (October)
- 3) Cut and chemically treat stumps of Russian olive trees and other volunteer trees.
- 4) Chemically treat leafy spurge patches with Plateau in the fall
- 5) Graze cells

Cell 7 & 8 – June 1 to June 15 (77.3 acres)

Cell 10 – June 16 to June 30 (61 acres)

Cell 5 – July 1 – July 15 (59 acres)

Cell 2 - July 16 – July 31 (84.3 acres)

Rest Cells 1, 3, 6, 9, 11 (3473 acres)

Prescribed burn summary table in Prairie Focus Areas

Sub Unit	County	Acres	Time of year
S Pool 4 Mgmt 1	Sargent - Refuge	105	3-5 in of green-up of cool season grasses
N Pool 2	Sargent - Refuge	240	3-5 in of green-up of cool season grasses
Hartleben WPA (Section 9)	Richland	640	3-5 in of green-up of cool season grasses
Hartleben WPA	Richland	30	October
Gunness WPA	Richland	230	3-5 in of green-up of cool season grasses
Gainor WPA cells 7,8,10	Richland	139	1-2 in of green-up of cool season grasses
Gainor WPA Cells 2, 5	Richland	144	September - October

Monitoring:

Vegetative monitoring sites were established on the three WPAs in 2004. Monitoring sites will be established on the Refuge in 2005 in the six priority areas. Monitoring will provide information on species composition change and VOR readings using Modified-Whittaker sampling plots and Robel pole readings. Study sites and two years of monitoring will be conducted by the University of Wyoming and then continued in the long term by Refuge staff.

OTHER GRASSLANDS

Native Prairie

CCP R1.1 Objective: Preserve, restore, and enhance the diverse native floral communities on Refuge's and WPA's existing native prairie so that greater than 75 percent of the plant community is composed of indicator species that are suitable for each site using Heidel's classification.

CCP R1.10 Objective: Reduce by 15% nonnative plants on Refuge lands and waters.

The following 2005 project was developed to make progress on the above objectives:

- 1) Mow thistle patches on native prairie throughout the District as needed.

Seeded Native and Tame Grasslands

CCP R1.4 Objective: Over the next 15 years convert 600 acres of planted cover to a diverse native floral community composed of 75% of the climax species identified in Heidel's Classification.

CCP R1.10 Objective: Reduce by 15% nonnative plants on Refuge lands and waters.

The following 2005 projects were developed to make progress on the above objectives:

- 1) Burn the following units in the spring of 2005

Sub Unit	County	Acres	Time of year
Management Unit 1	Refuge	1100	2-5 inch green up of cool season grasses
Management Unit 8	Refuge	80	2-5 inch green up of cool season grasses
Evanson/Anderson WPA	Sargent	160	1-2 inch green up of cool season grasses
Nelson WPA	Sargent	160	2-5 inch green up of cool season grasses
Evanson Predator Fence	Sargent	80	2-5 inch green up of cool season grasses
Wollitz Unit A WPA	Richland	236	1-2 inch green up of cool season grasses
Aaser Unit A WPA	Richland	50	2-5 inch green up of cool season grasses
Bladow WPA	Richland	170	2-5 inch green up of cool season grasses
Smith WPA	Richland	180	2-5 inch green up of cool season grasses
BAASLO WPA	Richland	260	2-5 inch green up of cool season grasses
Englevale WPA	Ransom	800	2-5 inch green up of cool season grasses
Big Dick WPA	Ransom	200	2-5 inch green up of cool season grasses
Strander WPA	Ransom	240	2-5 inch green up of cool season grasses

- 2) Use haying to increase the time window for spraying areas with thistle as necessary.
- 3) Treat chemically thistle patches with Curtail before thistle reaches bloom stage.
- 4) Mow thistle patches on Wollitz WPA.

- 5) Treat chemically leafy patches with Plateau in the fall as necessary
- 6) Cut invasive Russian Olive trees before prescribed burn on the following WPAs: Bladow, Big Dick, and Evanson/Anderson.

CROPLAND

CCP R2.2 Objective: Maintain no more than 135 acres of cropland as a Refuge share to provide green browse and millet/corn for migratory waterfowl.

The following 2005 projects were developed to make progress on the above objectives:

- 1) Work with cooperative farmers on a 75:25 share basis to provide food for migratory birds and other wildlife.

Field Number	Cooperator	Crop	Cooperator Share (Acres)	Wildlife Share (Acres)
8F	Breker	Corn	37.5	12.5
8A	Breker	Corn		
8D1	Breker	Corn		
8B	Breker	Soybeans	35	0
12C	Breker	Wheat	25	0
12E	Breker	Wheat	25	0
13C	Breker	Unknown	0	25
54BE	D. Hoistad	Corn	41.25	13.75
54BW	D. Hoistad	Corn		
54A	D. Hoistad	Corn		
58A	Q Hoistad	Corn	0	4
58B	Q. Hoistad	Corn/Beans	0/17	4/0
59A	Q Hoistad	Soybeans	5	5 (Goose damage)
59B	Q. Hoistad	Soybeans	16	0
59C	Q Hoistad	Hay Millet	0	0
61A-S	Q. Hoistad	Hay Millet	0	0
61B	Q. Hoistad	Hay Millet	0	0
27A	L. Gaukler	Soybeans	22	0
27B	L. Gaukler	Soybeans	24	0
27C	L. Gaukler	Corn	0	25
30B-W, north	L. Gaukler	Millet	17	17
30B-W,south	L. Gaukler	Wheat	18	0
30B-E	L. Gaukler	Wheat	40	0
14A	L. Gaukler	Wheat	30	4 (Goose damage)
14B1	L. Gaukler	Corn	5	20
14B2	L. Gaukler	Soybeans	31	0
15C	L. Gaukler	Wheat	22	0
38D,E	L. Gaukler	Wheat	11	5 (Goose damage)
Total			421.75	135.25

Food Plots on WPAs

Objective: Partner with Sargent County Pheasants Forever to provide for small food plots on two WPAs in Sargent County (Asche & Klefstad) as long as the food plots are productive and partners can provide consistent results.

The following 2005 project was developed to make progress on the above objective:

Klefstad WPA

Strategies:

- 1) Mow 20 acres of food plot and seed in 2005 to round-up ready beans to provide a firm seed bed.
- 2) Sargent County Pheasants Forever will seed 18 acres to a 1 crop for wildlife in 2005.

Asche WPA

Strategies:

- 1) Sargent County Pheasants Forever will seed 18 acres of food plot in 2005 to one crop for wildlife.

NATIVE WOODLANDS

R1.9 Objective: Maintain native woody vegetation on the Lake Tewaukon peninsula, on the shore of Lake Tewaukon, and along LaBelle Creek corridor to provide roosting habitat, food and cover for migratory and resident birds and other wildlife.

- 1) Work with National Wild Turkey Federation to plant native bur oak trees along the banks of Lake Tewaukon.

OTHER HABITATS

- 1) Cut invasive cedar trees from shelterbelt north of office along the nature trail.

cc: Rod Krey, ND/SD Refuge Supervisor
Bob Barrett, ND/SD Assistant Refuge Supervisor
Wayne King, Refuges, Biology
Carrie Cordova, Water Resources

Appendix 1

List of Water Rights

Water Right Filing No. 57: Declaration of Filing dated September 1, 1934 claimed 104 surface acres, for 397 acre-feet storage and 312 acre-feet seasonal use for Clouds Lake (Pool 8) now called Hepi Lake from unnamed tributary to Wild Rice River. Listed on the same sheet as Lake Tewaukon/White Lake, as per RO(EN) Marshall Fox's 11-14-83 memo. Water use in pools 5 through 10 is covered under this right, with Hepi Lake to be drawn down to fill these pools. ✓

Water Right Filing No. 64: Declaration of Filing dated September 1, 1934, for Lake Tewaukon and East and West White Lake (including Cutler Marsh), 1417 surface acres, for 7198 acre-feet storage, 4251 acre-feet seasonal from Wild Rice River and unnamed tributary. ✓

Permit #1261: 4852 acre-feet storage and 2287 acre-feet seasonal use, for a total of 7139 acre-feet from the Wild Rice River for fish and wildlife use. This permit covers additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh and West White Lake; 409 acre-feet seasonal use to replace water to be diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. Priority date December 28, 1964. ✓

Tewaukon NWR #1262: 1,130 acre-feet yearly (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake, dated December 28, 1964, diversion from an unnamed creek in the SE1/4 NW1/4, Sec. 2. ✓

Tewaukon NWR #1263: 686 acre-feet yearly for Mann Lake (total of 236 acre-feet comprised of 107 acre-feet storage and 129 acre-feet seasonal use) and Horseshoe Slough (total of 450 acre-feet comprised of 270 acre-feet storage and 180 acre-feet seasonal use) dated December 28, 1964, diversion from the Wild Rice River. ✓

Tewaukon NWR #3816 Nickeson Tract: 571 acre-feet (474 acre-feet storage, 97 acre-feet annual use) for the Nickeson Bottoms, a tract jointly owned by the ND Game and Fish Department, US Bureau of Reclamation and US Fish and Wildlife Service (FWS). Diversion is from the Wild Rice River, W ½ Section 27, T. 130 N., LTL, R. 54 W. Priority date August 15, 1985. Received perfected water permit on August 14, 1997. Recorded in the Register of Deeds, Sargent County on March 3, 1998. ✓

In December, the Service submitted an application for prescriptive water rights pursuant to the provisions of State Senate Bill No. 2182 for 859 acre feet. ✓

5548P.

Appendix 2

Pools, Elevations and Acres

Pool No. & Name	January 1, 2004			December 31, 2004		
	Elevation	Surface Acres *	Volume (acre ft.)*	Elevation	Surface Acres *	Volume (acre ft.) *
Pool 1 - Tewaukon	1147.67	1056	8026	1148.26	1062	8650
- Parker's Bay	1143.75	26	10	1147.5	79	245
Pool 2 - Cutler's Marsh	1148.0	179	381	1151.34	262	1166
Pool 2A	1152.0	24	46	1151.34	22	31
Pool 3 - Maka Pool	1152.75	69	155	1154.05	101	262
Pool 3A	1154.0	8	11	1154.05	8	11
Nickeson Bottoms	1152.75			1152.0		
Pool 4 - River Pool	1156.0	26	32	1159.96	122	325
Pool 5	1155.25	0	0	1156.0	0	0
Pool 5A	1160.0	0	0	1163.0	6	8
Pool 6	1163.0	0	0	1163.0	0	0
Pool 7	1168.0	0	0	1172.0	0	21
Pool 7A	1171.0	0	0	1173.50	20	2
Pool 8 - Hepi Lake	1170.25	87	196	1173.42	88	301
Pool 9	1165.0	10	25	1165.5	11	30
Pool 10	1172.25	4	4	1172.25	4	4
Pool 11 - West White Lake	1148.50	52	81	1150.0	72	174
Pool 12 - East White Lake	1148.15	102	504	1146.5	96	341
Pool 13 - Mann Lake	1205.0	42	75	1204	37	36
Pool 14 - Sprague Lake	1212.0	184	1250	1214.24	196	1676
Pool 16 - Horseshoe Slough						
- Pool 1 (A Pool)	1206.0	16	10	1206	16	10
- Pool 2 (B Pool)	1206.0	44	120	1202	5	1
- Pool 3 (C Pool)	1206.0	10	30	1203	6	6
- Pool 4 (B West)	1206.0	45	115	1206	45	115
- Pool 5 (B North)	1206.0	23	32	1204	7	2
- Pool 6 (C North)	1206.0	4	1	1206	4	1
- Pool 7 (C South & C East)	1206.0	17	31	1204	0	0

*1998-99 Pool acreages and volumes that were taken from a table calculated from information gathered during recently completed surveys of pool depths which were mapped for refuge management purposes. There are currently no functional gauges on pools that relate to mean sea level.

Appendix 3

WATER USE REPORT/MANAGEMENT PLAN SHORT FORM

<u>Storm Lake NWR, Sargent County</u> Station Name	<u>Summer 2004</u> Date of Inspection
<u>Declaration of Filing: 8/30/1937</u> Water Right No.	<u>Drainage ditch (legal)</u> Sources(s)
Several (522 acre-feet storage) (900 acre-feet seasonal)	Means of Diversion <u>Uncontrolled</u> Rate <u>Unknown</u>
Water Diverted: Yes ____ No <u>X</u>	Water Level <u>est 654 acre-feet</u> (Elevation or Est. Storage Amount)
* Impoundment(s): Yes ____ No <u>X</u>	
* Well(s) Free Flowing <u>none</u> gpm Pumped _____ gpm	Surface irrigation _____ (Crop) _____ Fish & Wildlife <u>X</u> virtually no public use Stock _____ Domestic _____

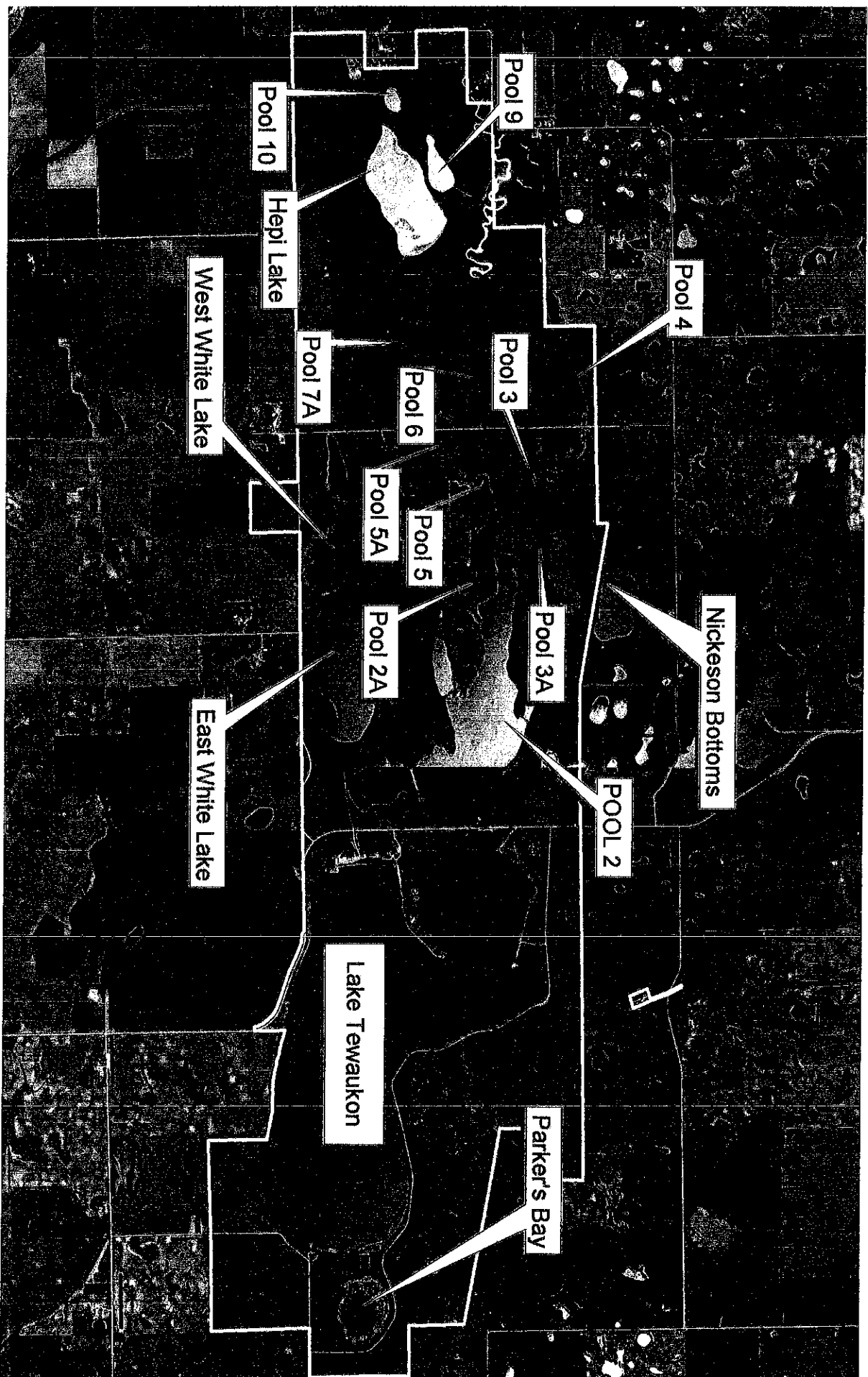
Overall Climatic Conditions: Since 2000 the amount of precipitation has decreased, the region seems to be going into a drier cycle.

Condition of Facilities: A diversion dam at the head of the feed ditch serving Storm Lake washed out well before 1976. The town dug a ditch beside the existing structure to allow for flood waters to move out of the town. At the end of 1997 the town placed a culvert with flap gate at an agreed elevation by a special use permit with the Refuge manager. The culvert is well above the existing structure and will allow flood waters to move out without impacting the water right. The ditch through the golf course was also cleaned in 1997 through a special use permit to facilitate removal of flood waters. At that time the Golf Course placed two new bridges on the fee title property without notification of the Refuge. An agreement with the Service was signed to mitigate the mowing of the fee title property with no mow areas along the golf course edges was signed in 1999.

Proposed Water Program: No water management capability is present. Water runs down the ditch into the lake to an unknown degree each spring. Water did fill Storm Lake in 1993. Current high waters and overland flooding have resulted in the feeder ditch becoming an outlet for the water in Storm Lake into the legal drain.

Comments: The lake serves as a waterfowl loafing site by Canada geese, canvasbacks, redheads, lesser scaup, mallards, teal, gadwalls during low water years. Water levels fluctuate without management. If active management was initiated, some degree of improvement might be gained by a cycle of draw down management. It is questionable if the benefits would be worth the costs. The Golf Course Association of Milnor, which at one time requested lake water to irrigate portions of the Storm Lake Golf Course, has found a well water source. The Association was granted a conditional water right, junior to that of the Service.

Figure 1: Tewaukon Unit Managed Wetlands Map



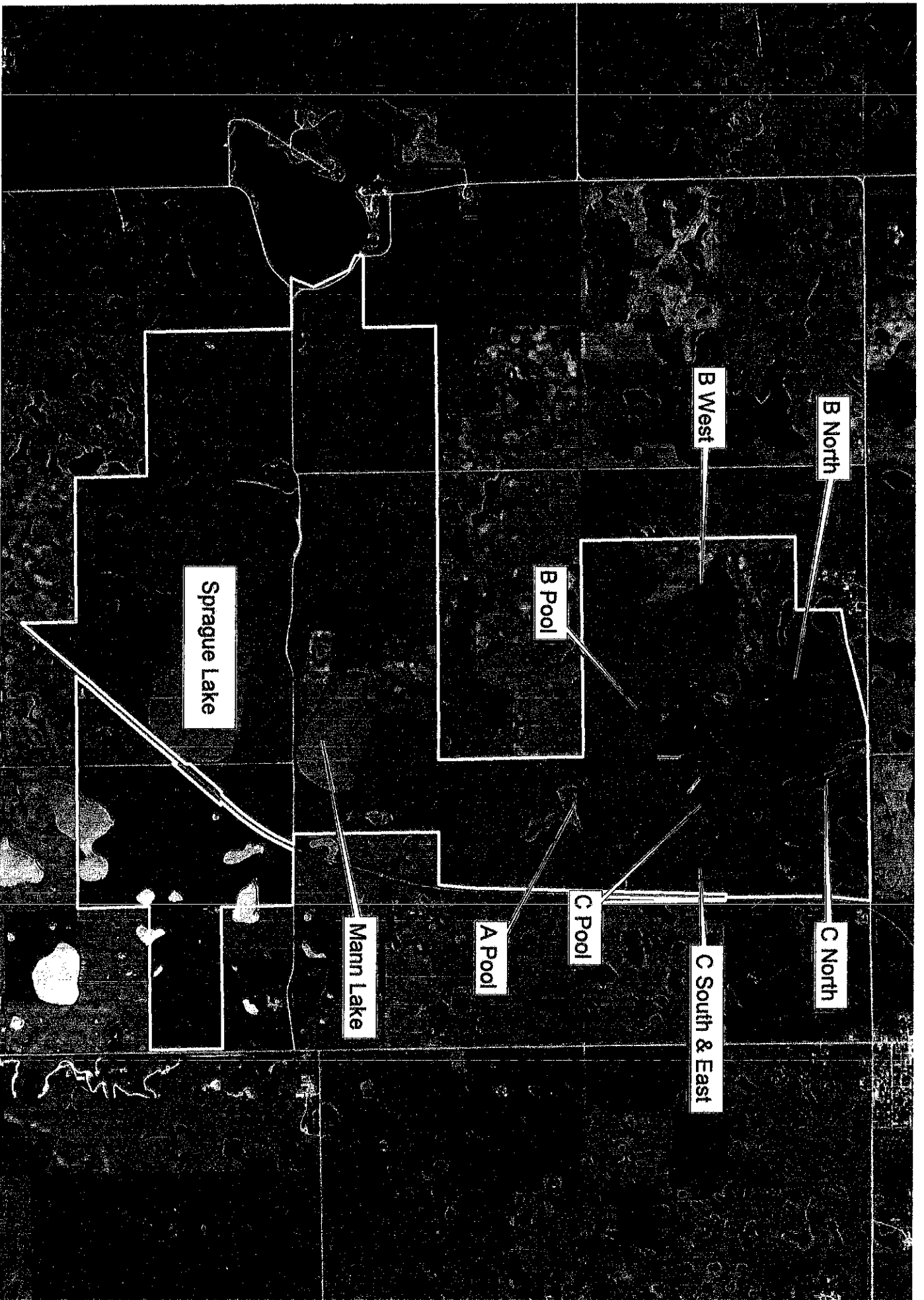


Figure 2: Sprague Lake Unit Managed Wetlands Map

Figure 3: Prairie Prairie Areas Tewaukon Unit

 Priority Prairie Areas
Tewaukon Unit

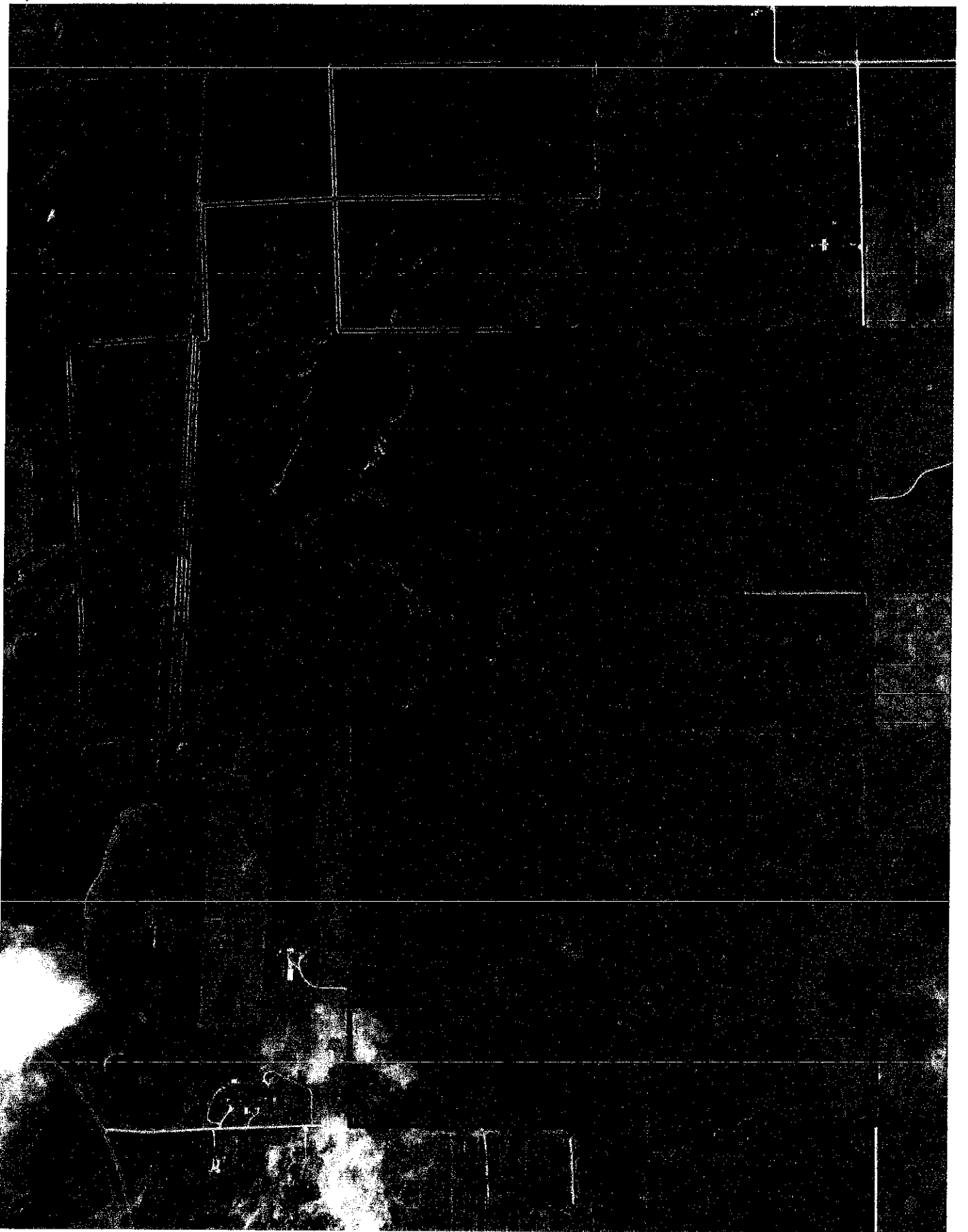




Figure 4: Priority Prairie Areas - Sprague Lake Unit

 Priority Prairie Areas
 Tewaukon Refuge boundary

Figure 5: Hartleben WPA - Priority Prairie Area



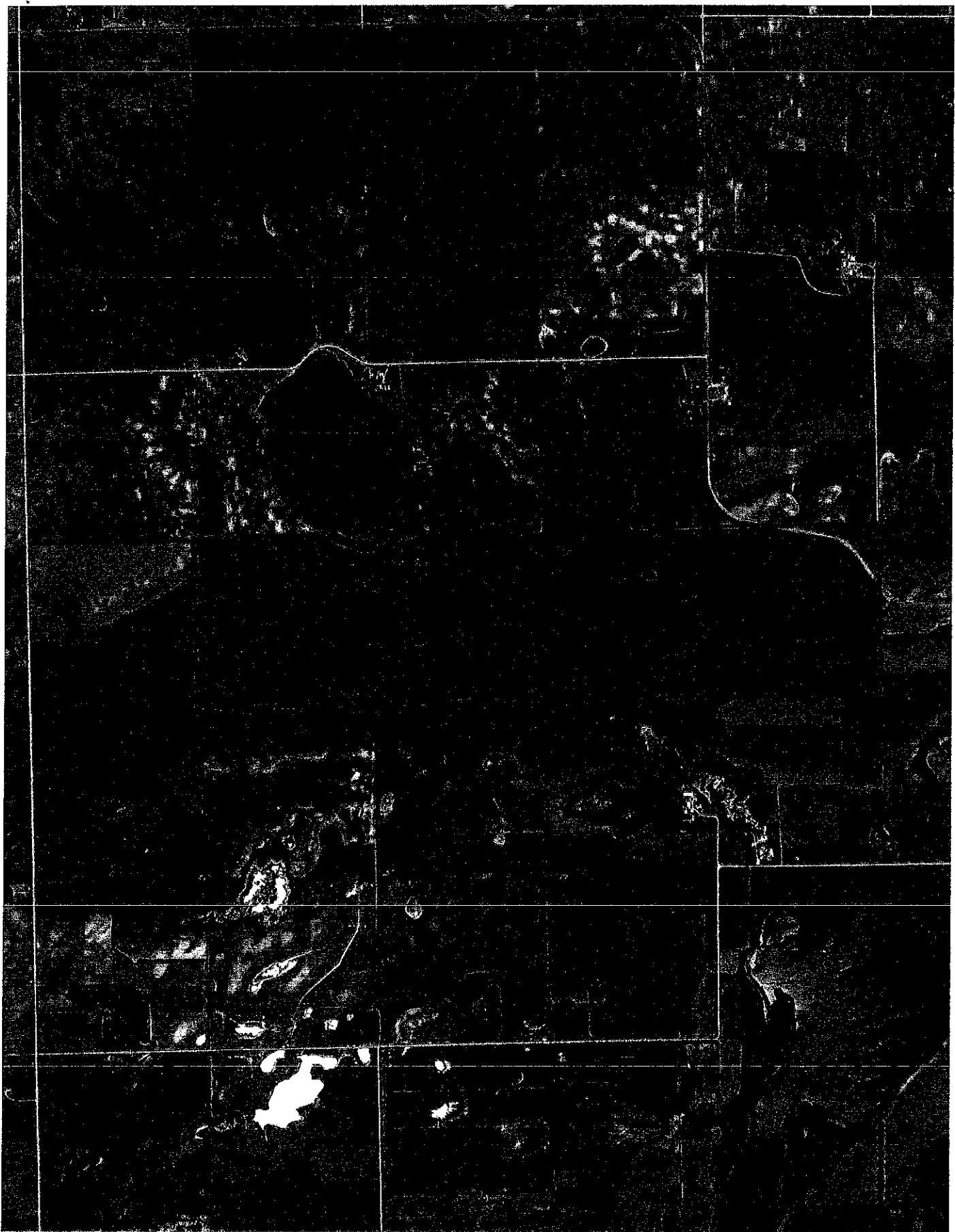


Figure 6: Guinness WPA - Priority Prairie Area

Figure 7: Gainor WPA - Priority Prairie Area

